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The Honorable Lisa P. Jackson
Administrator
United States Environmental Protection Agency
Ariel Rios Building - Mail Code: 1101 A, Room 3000
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Re: Virginia's Chesapeake Bay TMDL Draft WIP

Dear Administrator Jackson:

I am submitting these comments on behalf of the Shenandoah Riverkeeper and the Potomac Riverkeeper. Both the Shenandoah Riverkeeper and the Potomac Riverkeeper operate under Potomac Riverkeeper, Inc., a 501(c)(3) nonprofit corporation. The mission of the two organizations is to use community action and enforcement to protect and restore water quality in the Potomac and Shenandoah River watersheds for people, fish, and aquatic life. The Shenandoah Riverkeeper and Potomac Riverkeeper consist of over 1600 members. The members use the Shenandoah and Potomac Rivers to swim, fish, boat and recreate, as well as for business uses and as drinking water. Shenandoah Riverkeeper and Potomac Riverkeeper will be referred to hereinafter as "Shenandoah Riverkeeper."

We agree with EPA that Virginia's Draft Watershed Implementation Plan (WIP) is grossly inadequate and fails to provide reasonable assurances that the state will meet its pollution reduction goals under the EPA's Chesapeake Bay Total Maximum Daily Load (TMDL). Unfortunately, Virginia has simply repackaged its existing, under-performing programs instead of using the WIP as an opportunity to launch new ideas and better management goals. Ideally, Virginia will develop a WIP that sets out an effective plan and commits the resources needed to achieve its waste load allocations set out in the TMDL. We urge Virginia to remedy the problems in its WIP, maintain control of the clean-up plan, and clean up local waterways and bays in the process but in a way that works for Virginians. However, Given the inadequacies of Virginia's draft WIP, and in the event that Virginia fails to significantly improve its WIP, we have no choice but to support EPA's proposed backstops in the draft TMDL and encourage EPA to follow through with the proposed backstops.

These comments are focused on agricultural pollution in the Shenandoah Valley. Agriculture is a major contributor of pollution to the Chesapeake Bay and the largest contributor of pollution leading to stream impairment in the Shenandoah Valley. For this reason, Shenandoah Riverkeeper supports any and all efforts that drive pollution reductions from agricultural sources in the Valley and recognizes that they will benefit the bay as well. As EPA points out in the draft TMDL, "[a]griculture is the largest single source of nitrogen, phosphorus, and sediment loading to the Bay through applying fertilizers, tilling croplands, and applying

animal manure."[1] Empirically, agricultural sources are among the largest contributors to nitrogen, phosphorous, and sediment pollution from Virginia sources.[2] Therefore, reducing pollution from agriculture is necessary to successfully restore the Chesapeake Bay. Doing so will also significantly benefit the Shenandoah and Potomac rivers.

Shenandoah Riverkeeper has been heavily engaged in assessing and addressing the agricultural pollution in the Valley. Over approximately the last four years, Shenandoah Riverkeeper has conducted an extensive survey of animal feeding operations (AFOs), primarily dairies and poultry farms, but also beef cattle operations, among others. Our work revealed a number of problematic practices, including many that we consider direct stream discharges and large sources of pollution. The existence of these problematic practices confirms EPA's conclusion that Virginia's WIP will be insufficient to restore the Bay in the absence of significant programmatic changes. Current state and federal programs, both mandatory and voluntary, do not sufficiently address the pollution that we have documented and described in these comments. Addressing these sources of pollution and meeting the TMDL's waste load allocations would require a significant upgrade of Virginia's existing programs.

Although Virginia has enjoyed some success statewide with the voluntary implementation of best management practices, our survey and stream analysis reveal that these steps have occurred only in certain sectors, while failing to take hold on a wide scale in others. Furthermore, there are large areas of the state where cultural practices and farm economics seem to have prevented significant improvement at all. We base this not only on our own visual survey, but also on stream pollutant monitoring results. Unfortunately, the WIP proposes largely a continuation of the efforts that have failed to date. While we ultimately hope to see Virginia improve its WIP, we do support EPA's proposed TMDL backstops if Virginia fails to implement adequate measures to protect the Bay. We believe that if the backstops are properly implemented, they will help address many of the pollution sources we have documented.

I. The Chesapeake Bay TMDL and Virginia's WIP

Over the past thirty years, both federal and state governments have unsuccessfully attempted to restore the Chesapeake Bay. Due to the failure of past efforts, EPA now has no choice but to draft a TMDL. Under section 303 of the Clean Water Act, the TMDL must allocate pollution loads among sources at "a level necessary to implement the applicable water quality standards."[3] In preparing the TMDL, EPA is thus charged with calculating the pollution reductions needed from all sources in order to achieve water quality standards in the Bay.

A. Summary of EPA's TMDL Process and Evaluation of the WIP

EPA recognizes the failures of past programs and that the TMDL cannot merely be a paper exercise. At the same time, EPA recognizes the central role that the states must continue to play. Therefore, EPA is implementing a cooperative process with the Bay watershed states that is backed up by a mandate for real pollution reductions. First, EPA sent the states draft waste load allocations for each river basin in the Bay Watershed.[4] Then, EPA asked the states to

[1] ENVTL. PROT. AGENCY, DRAFT CHESAPEAKE BAY TMDL: SECTION 4: SOURCES OF NUTRIENTS AND SEDIMENT TO THE CHESAPEAKE BAY 30 (Sept. 24, 2010).
[2] ENVTL. PROT. AGENCY, DRAFT CHESAPEAKE BAY TMDL: SECTION 4: SOURCES OF NUTRIENTS AND SEDIMENT TO THE CHESAPEAKE BAY 6 (Sept. 24, 2010).
[3] 33 U.S.C. §1313(d)(1)(C).
[4] *See, e.g.*, Letter from Shawn M. Garvin, EPA Regional Administrator, to Doug Domenech (July 1, 2010).

prepare WIPs that explain how the states will achieve the pollution reductions necessary to achieve the load allocations set out in the TMDL. Next, EPA will incorporate the WIPs into the TMDL, which EPA intends to complete by the end of the year. In order to avoid the cycle of unattained goals and delayed action that has characterized efforts to restore the Bay thus far, EPA has asked the states to include in the WIPs "reasonable assurances" that the actions proposed in the WIPs will actually be taken and that the pollution reductions required to restore the Bay will actually occur.

Virginia submitted its WIP to EPA and to the public for comment on September 24, 2010. In comments on the WIP, EPA concluded that Virginia's WIP has "serious deficiencies" with respect to improving existing programs to achieve the additional pollution reductions needed to restore the Bay. In so finding, EPA noted that, "[t]he WIP does not include mechanisms that would support [the] high implementation rates" of various pollution control practices that the WIP relies on.[5] Furthermore, EPA does not have reason to believe that Virginia can achieve the "high implementation rates" without "legislative and regulatory changes . . . [such as the] proposals presented to Virginia's WIP Stakeholder Advisory Group."[6] Finally, Virginia's WIP failed to provide reasonable assurances that the programs proposed would be adequately funded.[7]

After outlining the deficiencies in Virginia's draft WIP, EPA offered suggestions for how Virginia could improve its plan. With respect to pollution from agriculture, EPA first suggested that Virginia expand its Nutrient Management Plan (NMP) requirements to require more best management practices (BMPs).[8] In order to correct the disconnect between Virginia's BMP implementation goals and the efficacy of the programs relied on in the WIP, EPA suggested that Virginia expand its regulation of AFOs in order to ensure that enough farms actually install those BMPs.[9] EPA further suggested that Virginia lower the threshold of the CAFO permit to include smaller AFOs and specified that the scope of the program be designed to cover small dairies.[10] Furthermore, to satisfy EPA, Virginia's "WIP should include any program-building milestones such as studies, legislative proposals, or cost-share program enhancements that are expected to occur."[11] Lastly, to remedy the lack of assurances regarding Virginia's funding for its WIP, EPA suggested that Virginia's WIP include "a strategy and schedule for addressing program funding and staffing gaps."[12]

EPA has identified several backstops that it will employ in the event Virginia fails to make adequate improvements to its WIP. The backstops include subjecting *all* AFOs to the same pollution control requirements currently required of permitted CAFOs, either by amending the CAFO regulations or through EPA's residual designation authority under 40 C.F.R. §

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[5] ENVTL. PROT. AGENCY, EPA COMMENTS ON THE VIRGINIA DRAFT PHASE I WATERSHED IMPLEMENTATION PLAN 2 (Oct. 4, 2010).
[6] ENVTL. PROT. AGENCY, EPA EVALUATION OF VIRGINIA DRAFT WATERSHED IMPLEMENTATION PLAN 1 (Sept. 24, 2010).
[7] ENVTL. PROT. AGENCY, EPA COMMENTS ON THE VIRGINIA DRAFT PHASE I WATERSHED IMPLEMENTATION PLAN 4 (Oct. 4, 2010).
[8] ENVTL. PROT. AGENCY, EPA EVALUATION OF VIRGINIA DRAFT WATERSHED IMPLEMENTATION PLAN 2 (Sept. 24, 2010).
[9] *Id. See also* DAVID MCGUIGAN, ENVTL. PROT. AGENCY, REGION III AFO/CAFO INITIATIVE 28, 29 (Sept. 30, 2010), *available at* www.epa.gov/.../2010_0930_dave_mcguigan_region3_afo_cafo_initiatives.pdf.
[10] ENVTL. PROT. AGENCY, EPA COMMENTS ON THE VIRGINIA DRAFT PHASE I WATERSHED IMPLEMENTATION PLAN 3 (Oct. 4, 2010).
[11] *Id.*
[12] *Id.* at 4.

122.23(c).[13] Additionally, "all animals except dairies . . . on AFOs that are not subject to CAFO permit conditions . . . [will] receive feed management."[14] In sum, EPA will require that a greater percentage of Virginia's farms implement the BMPs currently required only of CAFOs.

B. Shenandoah Riverkeeper's Evaluation of the WIP

We agree with the EPA that Virginia's WIP fails to provide any reasonable assurances that Virginia's pollution control efforts will occur and that the state will stay within its waste load allocations under the Bay TMDL. Virginia's WIP is little more than a repackaging of its existing programs, which have proved ineffective in addressing urban stormwater and agricultural runoff. As EPA noted, Virginia fails to propose programs that are likely to translate into the necessary pollution reductions. Virginia offers neither concrete incentive programs nor does it pledge to increase regulation. Without additional funds and better program staffing, Virginia provides no reason to expect this trend to change.

1. Examination of the Deficiencies in the WIP's Agriculture Provisions

The WIP indicates that Virginia will achieve its waste load allocations for agriculture by implementing a menu of BMPs on a very high percentage of the state's farms. The WIP, however, does not dedicate meaningful funding or propose any significant new regulatory programs to actually achieve these high implementation rates. Indeed, the WIP proposes a continuation of current programs, which have proven inadequate to control agricultural pollution, particularly in the areas of heavy animal agriculture like the Shenandoah Valley.

Virginia's current method of managing agricultural pollution relies on voluntary programs and three kinds of mandatory permitting programs. The voluntary programs include cost sharing and tax credits. Both programs compensate a farmer for implementing a specific BMP up to a percent of the cost or a fixed maximum.[15] As outlined fully in the TMDL, these voluntary incentive programs have not been adequate to address agricultural pollution.

Virginia's current permitting programs consist of a general Virginia Pollution Abatement (VPA) permit, a VPA permit specific to poultry, and a Virginia Pollution Elimination System (VPDES) permit for CAFOs. The minimum thresholds for regulation are as follows: the VPA general permit applies to operations consisting of more than 200 dairy cattle, 750 swine, or 3,000 sheep/lambs; the VPA poultry permit applies to farms with more than 20,000 chickens or 11,000 turkeys; and the VPDES permit applies to large CAFOs, which are defined as having more than 700 dairy cows, 2500 swine, or 55,000 turkeys. The fundamental problem is that these high program thresholds mean that the great majority of Virginia's farms escape regulatory oversight, and that the VPA program (which covers more farms than the VPDES program) does not comprehensively address all types of pollution caused by a feeding operation.

There are several reasons why the existing permit regime does not adequately address agricultural pollution. First, the VPA program does not have high compliance rates across all farming sectors. In a recent survey, EPA found that only ten percent of all dairy farms comply

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[13] ENVTL. PROT. AGENCY, DRAFT CHESAPEAKE BAY TMDL: SECTION 8: WATERSHED IMPLEMENTATION PLAN EVALUATION AND BACKSTOP ALLOCATIONS 11, 15 (Sept. 24, 2010) ("will become regulated through some... appropriate designation/rulemaking/permits").

[14] *Id.* at 15.

[15] DEP'T CONSERVATION & RECREATION, *VIRGINIA AGRICULTURAL BMP COST SHARE AND TAX CREDIT PROGRAMS.* http://www.dcr.virginia.gov/soil_and_water/costshar.shtml (last visited Oct. 29, 2010).

with the VPA program.[16] This means that even the waste management and application practices are not being enforced on ninety percent of dairy farms. Second, only thirty-three farms of any kind in Virginia's Shenandoah Valley have registered with DEQ under the VPA general permit.[17] VPA's poor coverage of AFOs in Virginia is further highlighted by the fact that the average farm size in the Valley is equal to 100 dairy cows, or half of the minimum VPA permit threshold.[18] This figure looks especially small when compared with the estimated 27,000 cattle farms in Virginia.[19] Third, only the VPDES permit requires BMPs that go beyond nutrient management and application. Most significantly, this is the only program that deals with contact between production areas and surface waters, one of the most important areas for future pollution reductions. There are only about thirty permitted CAFOs in Virginia.[20] Thus, few farms are required to implement these additional BMPs.

Virginia's voluntary programs have also proven unsuccessful in generating high percentage levels of BMP implementation. Participation in voluntary programs in the Valley is very low. In fact, Shenandoah Riverkeeper's evaluation of the records reveal only 177 farms have participated in the stream exclusion program.[21] Relative to the number of farms in the valley or in Virginia and the variety of BMPs, this indicates low levels of participation. The deeply impaired state of nearly every stream in the Shenandoah Valley provides additional commonsense evidence to support this conclusion given that over 97% of non-forested land is in agriculture. Given the high levels of pollution from agriculture in Virginia, the current programs, both mandatory and voluntary, are not effective.[22]

To meet the waste load allocations in the TMDL, Virginia relies on very high levels of BMP implementation. However, as EPA recognized, Virginia intends to attain these implementation levels through its voluntary and permitting programs.[23] Yet Virginia provides no reason to believe that these programs will be more successful in the future than they have been previously. The WIP provides no details as to how it will expand the coverage of these programs and fails to commit any meaningful funding to implement them.[24] Critically, the WIP fails to describe how Virginia would meet the staff requirements for technical assistance to execute and monitor the incentive-based programs.[25] Virginia does indicate that it might amend its VPA and VPDES regulations to make certain BMPs requirements for getting a permit.[26] However, Virginia does not specify when the regulations will be changed or if all permitted

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[16] DAVID MCGUIGAN, ENVTL. PROT. AGENCY, REGION III AFO/CAFO INITIATIVE 28, 29 (Sept. 30, 2010), *available at* www.epa.gov/.../2010_0930_dave_mcguigan_region3_afo_cafo_initiatives.pdf.
[17] TELEPHONE CONVERSATION WITH DEQ EMPLOYEE, VALLEY REGIONAL OFFICE,(types of farms registered under VPA general permit: 28 dairy, 2 swine, and 3 cattle farms).
[18] TELEPHONE CONVERSATION WITH DEQ EMPLOYEE, VALLEY REGIONAL OFFICE (stating that average farm size in Shenandoah Valley is 100 dairy cows).
[19] WATERSHED IMPLEMENTATION PLAN, *supra* note 32, at 63 (there are about 27,000 farms in Virginia with at least cattle on them).
[20] ENVTL. PROT. AGENCY, DRAFT CHESAPEAKE BAY TMDL: SECTION 4: SOURCES OF NUTRIENTS AND SEDIMENT TO THE CHESAPEAKE BAY 30 (Sept. 24, 2010).
[21] DEPARTMENT OF CONSERVATION AND RECREATION, AGRICULTURAL BMP AND CREP DATABASE QUERY PARAMETER SELECTION FORM (NOVEMBER 2, 2010), *available at* http://webdat.dcr.virginia.gov/cfprog/dswc/bmpprm.cfm.
[21] *Id.*
[22] WATERSHED IMPLEMENTATION PLAN, *supra* note 19, at 58-65.
[23] *Id.*
[24] *Id.*
[25] *Id. See e.g.*, WATERSHED IMPLEMENTATION PLAN, *supra* note 19, at 63 ("Livestock Stream Exclusion").
[26] *Id.*

entities will be subject to this requirement.[27] Even if these regulations are amended, they still will fail to cover a large number of farms in the state.

We would strongly prefer to see Virginia develop an adequate WIP, and thereby allow the state to maintain control over how it will achieve its share of restoring the Bay. The state's failure to commit to a real implementation plan left EPA no choice but to propose the backstops outlined in the TMDL. This choice is a step backward for Bay restoration, and also a missed opportunity to work cooperatively with Virginia's farmers to reduce water pollution. If Virginia fails to amend its WIP and provide reasonable assurances that it will meet its waste load allocations, then Shenandoah Riverkeeper supports the EPA in applying those backstops.

2. Nutrient Management Unaddressed by the WIP

There are several other issues that neither the TMDL nor the WIP address that are currently, or soon will be, significant risks for both local water quality and the health of the Bay.

One current issue that neither document deals with is the growing intensity of animal feeding in the Valley, and the fundamental problem of excess manure and other waste. Neither document addresses either how to facilitate restructuring of the industry in an economically and sustainable way, or how to dispose of the tremendous amounts of waste produced by chicken, dairy, and beef operations. Although none of these are explicit in the WIP, in discussions about Bay restoration and agriculture, the McDonnell administration has put forth three clear assertions that fail to capture the reality on the ground. The first assertion is that most of the agricultural pollution problems can be attributed to "bad actors." The second assertion is that these bad actors can be addressed by the Agricultural Stewardship Act. The third assertion is that our voluntary programs are working and if we just continue them we'll get to our Bay restoration goals.

Shenandoah Riverkeeper addresses each of these assertions in some way in these comments but we also feel that it is important to provide some general context. We assert that now is the time for Virginia to recognize there are severe agricultural pollution problems originating in the Shenandoah Valley. The problems are not a reflection on the land stewardship of Virginia's farmers, but simply arise from the complexities of an evolving agricultural society rooted in practices established over generations. The environmentally problematic practices developed when agriculture was much less intense, when arable land was plentiful, and when there was little emphasis on how farming affects water quality and public water resources.

These polluting farming practices have not adapted to changing circumstances over time, and have become more damaging as agriculture has intensified. Over the past several decades, the number of animals per acre and the amount of fertilizer applied to crops have both steadily increased. Meanwhile, families have grown, farms have been divided, and farming products have been commoditized and devalued through a consolidation and vertical market integration of meat, eggs and milk. Families now have to survive off much less land, while receiving comparatively less money for the same product.

Unfortunately, many farmers believe the type of changes needed to protect water quality will be detrimental to their livelihood. However, it is clear that two things are needed to restore the Bay and protect the Shenandoah River. First, we need more than small, incremental changes

[27] *Id.*

in how our farms interact with groundwater and surface water. Significant restructuring of some farms will be required, which cannot happen without significant support from the state and federal governments. Neither the inadequate funding of the state's WIP or EPA's increased regulations addresses this need. Second, we must find alternative markets for the huge amounts of manure generated in the Valley, so that this manure is no longer a burden on the watershed. It is estimated by industry that nearly 2 billion pounds of feed, mostly corn and soy are shipped into the Valley annually for use as poultry livestock feed. The importation of feed represents an overwhelming nutrient input in the Valley. This is the kind of imbalance that is created when you add five major poultry integrators and 700 confined poultry operations on top of an already mature agricultural industry of dairy and cattle. Ultimately the nutrients which are not exported (carried) out of the valley as meat either accumulates in the soils or is carried by our rivers into the Chesapeake Bay. Buffers and nutrient management will not undo the basic net importation of nutrients, and therefore they won't solve the fact that the amount of nutrients generated in waste far exceeds the agronomic uptake of all the crops grown here . Both Virginia and EPA fail to address any possible alternative uses of manure, such as energy.

The WIP also fails to address the use of phosphorus site index (P Index), which is an inadequate method of managing nutrient application. In this regard, Riverkeeper endorses the Chesapeake Bay Foundation's position, wherein they argued that: phosphorus site index. . . is not sufficiently protective of water quality. While the P Index is a valuable tool in identifying regions at high risk for phosphorus loss, soil scientists that developed the P Index state in no uncertain terms that the P Index is not an adequate tool to address regional imbalances in manure. They strongly recommend that all producers be encouraged to apply manure at rates designed to meet plant uptake requirements and avoid over-application of phosphorus. They note that continued reliance on the P Index in areas where manure is produced in excess of crop needs is not sustainable in the long term, and will lead to an eventual build up of soil phosphorus to levels where no further phosphorus can be applied.[28] As a result, the Chesapeake Bay Foundation and the Riverkeeper ask that "the Virginia Nutrient Management Standards and Criteria be modified to phase out the use of the P Index . . . by 2017 for biosolids application and poultry litter, and by 2025 for other livestock."[29]

II. On the Ground Analysis of Agricultural Practices in the Shenandoah Valley

Over the past four years, Shenandoah Riverkeeper has visually surveyed thousands of farms in the Shenandoah Valley by road and by airplane. We have thoroughly evaluated 660 AFOs in the Shenandoah Valley. Twenty-seven of the farms had high levels of BMP implementation, which we evaluated in our survey. The other 633 farms revealed pollution-causing problems, almost always because farmers neglected to implement required BMPs and did not take advantage of voluntary incentive programs. Therefore, it is impossible for us not to conclude that the current voluntary incentive programs and permit-based programs have proven inadequate to control pollution from these Virginia AFOs.

In cataloguing the 660 farms, Shenandoah Riverkeeper divided each farm by type of animal operation or crop system and then assigned each farm a letter grade between A and F,

[28] Chesapeake Bay Foundation, Comments on Chesapeake Bay TMDL Phase 1 Watershed Implementation Plan prepared by the Commonwealth of Virginia 16 (2010).
[29] *Id.* at 16-17.

corresponding to the quantity and quality of visual pollution generated by the farming practices. Farms earning a grade of A or B exhibited few visible problems and showed signs of implementing BMPs aimed at improving water quality, such as cattle exclusion from streams, cross fencing, off-stream watering, vegetated buffers, and good winter-feeding practices. Shenandoah Riverkeeper scored an AFO at a C-level when we found livestock had regular access to a stream or farm pond. We downgraded these C farms to a D when we observed that the animals were being concentrated in or next to the stream, for example by placement of feeding troughs or fencing. Most of the other AFOs that earned a grade of D showed visible signs of chronic or seasonal problems. In addition, some farms received a D grade when there was evidence that the operator farmed or row-cropped directly through headwater streams and intermittent springs or channels. A grade of F was assigned to farms having confinement areas with perennial or intermittent streamflows running through them or animals being fed for long periods adjacent to a stream. Finally, farms that had inadequate manure storage mechanisms were given grades of D or F depending on severity of the condition and our judgment as to the manure storage's contribution to water quality impairment. As further evidence of the damaging nature of these practices, in the appendices, we have included a graph of the correlation between farms exhibiting poor practices (those scoring a D or F), and degraded water quality as measured by average nitrate concentration. The appendix discusses the methodology and conclusions in more detail, but Shenandoah Riverkeeper found an extremely strong positive correlation between the number of ag. sites graded D or F in a watershed and the average nitrate concentration over the past three years. We felt this helped to both corroborate the value of our visual observations and grading system, and also made an argument that the there is a relationship between the number of severe farming practices and the corresponding degradation of the nearest stream.

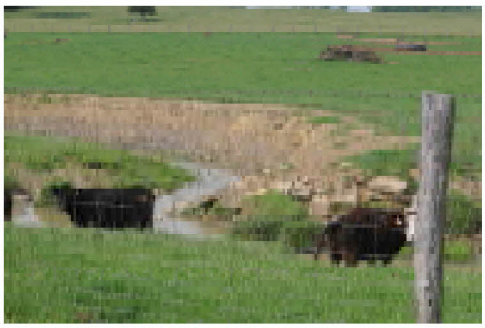

Figure 1: Cattle have caused bank destruction and loss of riparian vegetation

Our four year survey revealed that the most widespread problematic practices include streamside feeding, cattle congregating/loafing in streams and rivers, locating barns near streams, inadequate manure storage, planting and cultivating hay or row crops right through spring seeps and intermittent streams, and inappropriate winter manure application. In fact, over seventy-eight percent of all farms observed showed livestock intrusion into streams in places visible from public roads, nineteen percent engaged in streamside feeding, fifteen percent exhibited poorly sited confinement or animal concentration areas publicly visible, and fifteen percent exhibited visibly problematic manure storage, despite the fact that we only captured severe and obvious problems. The high rate of cattle in streams is particularly illustrative for the work that has to be done to achieve the WIP's goals and the inadequacy of the tools the state has proposed, as the WIP has a goal of achieving a 95 percent implementation rate for cattle exclusion on farms in the Bay watershed.

The results of the survey are set out more fully in the specific sections below and in the Appendices. All of the poor practices would be reduced significantly if farms had better

voluntary incentive programs, better financial support, or if these can't be reasonably assured, then better regulations.

A. Animal Access to and Loafing in Streams and Rivers

A tremendous amount of sediment and animal waste enter Chesapeake Bay tributaries in the Shenandoah Valley because of cattle access to streams and rivers. Of the farms that Shenandoah Riverkeeper has surveyed, 78 percent had areas or entire valley stream sections where cattle congregated and wallowed. Cattle physically damage stream banks as they enter and exit the streams or walk on stream banks, due to their sheer size and the sharpness of their hoofs. Damaged areas then become highly prone to erosion and discharge sediment downstream. The erosion caused by cattle results in unnaturally wide and shallow streams, damages important riparian tree and root structures, and prevents the establishment of undergrowth and vegetated buffers. Furthermore, when cattle have access to streams, they deposit manure and urine directly into or adjacent to the streams, which directly increases nitrogen and phosphorus levels in local streams and the Chesapeake Bay system. The organic material on the bottom of the streams all but destroys the natural balance of the stream and desirable insects and fish. All of these effects combine to cause tremendous damage to local water quality in the Valley. Cattle access to streams is now widely recognized by far to be the greatest contributor to stream impairment. In fact, animal access to streams is often listed as the primary cause of benthic stress and bacteria loadings in streams.

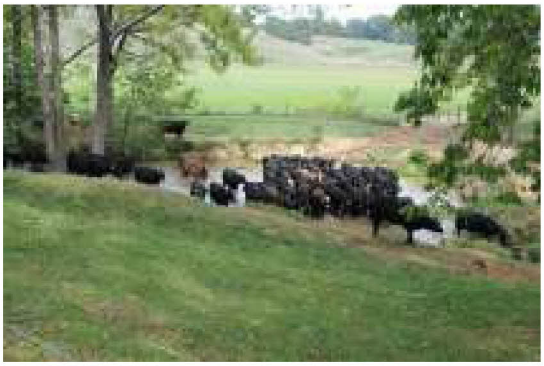

Figure 2: Typical daily cattle congregation in stream

Virginia's WIP includes livestock stream exclusion as one of the primary BMPs to be implemented to achieve agricultural pollution reductions. In the WIP, Virginia sets the goal of 95 percent implementation of this BMP by 2025 to achieve the TMDL's pollution reduction goals.[30] However, the WIP does not explain how the state will achieve such a high rate of implementation with this BMP. Indeed, the state is already behind in working towards this goal. The Chesapeake Bay Foundation calculated that Virginia only achieved

Figure 3: Streambank destroyed by cattle resulting in erosion of bank and sediment destroying instream life.

[30] 40 C.F.R. § 412.31(a)(ii); 40 C.F.R. § 412.43 (dairy, cattle; veal, poultry). *See also*, 9 VA. ADMIN. CODE § 25-191-50.

thirteen percent of the goal for stream fencing during 2009, the first year of the Chesapeake Bay Program's three-year "milestone" reporting period.[31]

Virginia proposes improving the permit requirements for both AFOs and CAFOs by including livestock stream exclusion as a clear requirement. Currently, CAFOs must "design, construct, and maintain" the production area in a way that "contain[s] all manure, litter, and process wastewater including the runoff and the direct precipitation."[32] Virginia plans to clarify this requirement by adding stream exclusion as a requirement of the NMP that must be prepared and implemented by all CAFOs.[33] This requirement would only apply first to permitted CAFOs, which constitute a small portion of the state's farms. Virginia also intends to extend this requirement to AFOs that are required to comply with the VPA general permit.[34] Changing the requirements of the AFO General Permit to include livestock stream exclusion will only affect farms with more than 300 animal units, or about 200 dairy cattle.[35] Although this is an important step, it will leave many small dairies and most grazing operations unaddressed.

In order to achieve ninety-five percent implementation of this BMP by 2025, Virginia states that all farms with twenty or more cattle will need to engage in this practice.[36] Therefore, to reach farms with twenty or more cattle and less than 200 cattle, which is the lower limit for VPA permit application, Virginia will have to rely on voluntary programs. According to the 2007 Agricultural Census, in Virginia there are 666 dairy farms that will need to use the voluntary program.[37] However, voluntary programs for this practice have been available for decades and yet have generated only low levels of implementation.[38] The WIP commits no new funding for these programs and does not provide a strategy for improving their implementation. Therefore, Virginia has not provided reasonable assurances that it will improve its incentive programs to generate the necessary levels of implementation with this best practice in order to actually reduce pollution in the Bay.

In the event that Virginia fails to improve its strategy for achieving ninety-five percent implementation, EPA's backstop of reducing CAFO thresholds would help approach the necessary implementation levels. EPA could amend its regulations to require that all CAFOs implement this BMP and then reduce the CAFO threshold. As a result, EPA's backstops could ensure that more farms would follow this BMP. Consequently, Shenandoah Riverkeeper supports EPA's use of backstops if Virginia fails to provide reasonable assurance that it can achieve its implementation goals.

B. Streamside Feeding and Concentration Near Streams and Intermittent Channels

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[31] L. PRESTON BRYANT, JR., PROGRESS REPORT ON THE CHESAPEAKE BAY AND VIRGINIA WATERS CLEANUP PLAN, (DEC. 31, 2009), available at http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/RD4712009/$file/RD471.pdf.

[32] WATERSHED IMPLEMENTATION PLAN, *supra* note 19, at 63. This would be an addition to 9 VA. ADMIN. CODE § 25-191-50.

[33] WATERSHED IMPLEMENTATION PLAN, *supra* note 19, at 63.

[34] 9 VA. ADMIN. CODE § 25-192-10.

[35] WATERSHED IMPLEMENTATION PLAN, *supra* note 19, at 63.

[36] NATIONAL AGRICULTURAL STATISTICS SURVEY, USDA, 2007 CENSUS OF AGRICULTURE (2007) (Sum of number of farms in 2007 with more than 20 and less than 199 milk cows), *available at* http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/Virginia/index.asp.

[37] DEP'T OF CONSERVATION & RECREATION, PROGRAM YEAR 2011: VIRGINIA AGRICULTURAL COST SHARE (VACS) BMP MANUAL CCI-SE-1-1 (2010) (paying $1 per linear foot of fencing).

[38] WATERSHED IMPLEMENTATION PLAN, *supra* note 19, at 62.

Shenandoah Riverkeeper observed 127 farms where feeding stations were located next to or near a stream so that runoff and discharge of cattle waste and sediment were inevitable. Streamside feeding relates to cattle stream intrusion and the herd's reliance on stream access for watering. When pastures are producing sufficiently, cattle graze over wide areas and waste is naturally deposited in the same areas that the animals graze and nutrients are largely used up by the grass stand. However, during a significant portion of the year when pasture does not produce sufficient feed, many cattlemen rely on hay and grain supplemental feeding next to streams, which is also where the animals obtain their water. This can mean that the animals spend virtually twenty-four hours a day, seven days a week next to the stream. This practice increases pollution in three ways: (1) areas adjacent to streams become denuded, resulting in increased runoff during rain events; (2) waste accumulations are not used agronomically so excess nitrogen leeches into shallow groundwater and ends up in the nearest stream; and (3) the majority of nitrogen is volatilized as urea ammonia, which is widely known to create an ammonia and nitrogen load in nearby watersheds.

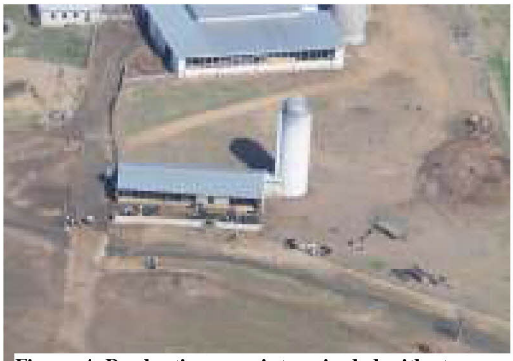

Figure 4: Production area intermingled with stream

At some farms, the problems are exacerbated by the practice of confining animals near a stream or spring. Shenandoah Riverkeeper observed animals confined or concentrated near streams or springheads at 100 farms in the Valley. These areas include loafing lots, exercise lots, sacrifice lots, feedlots, salt/mineral licks and watering areas, among other uses. Animal confinement near streams leads to the same type of degradation that is caused by feedlots located near streams. The common historical practice of locating barns near streams means in many cases it is intrinsically difficult to relocate livestock away from streams. Therefore, it will be necessary to prescribe short-term BMP's to mitigate the existing conditions, while planning for long-term improvements such as barnyard relocations. The Commonwealth has a duty to support the landowner in making difficult, but necessary, long-term transitions, but it has not properly addressed that duty in the draft WIP.

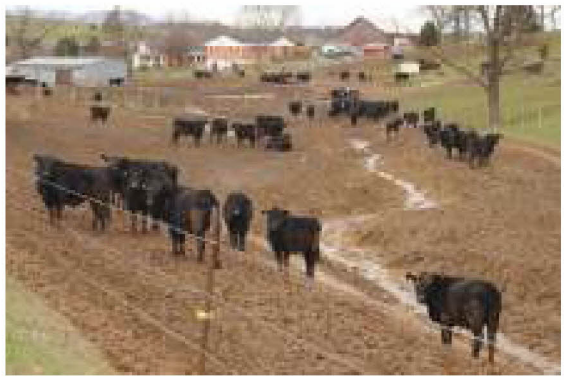

Figure 5: Stream runs through confinement area

Despite the prevalence of poor practices in the Valley, no portion of the Virginia WIP directly references or seeks to limit the practice of streamside feeding and concentration or

proper manure management for winter cattle feeding areas and supplemental dairy feeding areas. Although the WIP attempts to address stream intrusion, it neglects to address streamside feeding and concentration. Fencing the animals out of the stream, while allowing them to be concentrated near the stream, is self-defeating.

Vegetated buffers are only a partial solution to this practice, but they are the only portion of the WIP that even tangentially addresses the effects of streamside feeding and concentration. Buffers establish a minimum distance between livestock concentration and streams, while also performing important filtering functions. The WIP only targets vegetated buffers on crop and hay fields.[39] Buffers are only required at permitted AFOs and CAFOs with respect to manure application; this requirement only applies to the few CAFOs and AFOs that are regulated in the state of Virginia,[40] leaving most farms uncovered. In this case, none of the current programs or the WIPs proposed changes address livestock concentrations near streams at dairies and other AFOs.

Eventually, all confinement and concentration areas need to implement both effective nutrient capture systems and must be physically covered to eliminate environmental exposure. Even though the complexity and cost of implementing the necessary changes will not be insignificant, there are huge benefits to be reaped in the form of water quality improvements. Thus, the Commonwealth should immediately launch a new effort to help farmers with this important task. In the meantime, the Commonwealth should prohibit animal concentration near streams to establish a physical separation and allow nutrients and sediment to be absorbed agronomically. Virginia could address this issue by adding a new requirement to VPA and VPDES permits stipulating that animals not be concentrated near stream channels, including intermittent channels. Additionally, Virginia should lower the animal unit level for VPA permits or use effective incentive programs to increase implementation of any or all of these practices. Should Virginia fail to address this problem, EPA could do so as part of its efforts to amend its CAFO regulations. EPA should add buffers as a BMP, and establish minimum criteria for any confinement or concentration area. Then, EPA could also reduce the CAFO thresholds such that more farms would be subject to this BMP.

C. Manure Storage

Manure storage continues to be a problem in the Shenandoah Valley. The Riverkeeper has observed problems in both dairy and poultry manure storage at 102 farms. Poultry manure frequently becomes a problem when deliveries to end-user farms are deposited in high run-off and leaching risk areas.

Figure 6: Manure pile saturated and leachate flowing downhill toward nearby stream

For facilities permitted under the poultry VPA program, the care taken to locate temporary pile storage is correlated to the likelihood that the farm will be

[39] 9 VA. ADMIN. CODE § 25-191-50; 9 VA. ADMIN. CODE § 25-192-70.
[40] WATERSHED IMPLEMENTATION PLAN, *supra* note 19, at 64.

inspected. Poultry operation inspections have fallen into a general seasonal routine. As a result, when the risk of inspection is low, the litter piles are more likely to be sited poorly, where the risk of leaching or runoff is higher.

Figure 7: Liquid dairy sprayed on snow because of lack of storage

On dairy farms, storage capacity is one of the biggest problems affecting manure management. For example, during the winter months, Shenandoah Riverkeeper has witnessed the application of dairy slurry to frozen and/or snow-covered fields on a number of occasions. This occurs not only when manure storage space runs out, but also during double cropping scenarios, such as farms growing small grain or corn, where multiple annual manure applications take place. It is not uncommon for farms to engage in these harmful practices because they have expanded the number of animals without a corresponding increase in manure storage capacity. All winter application of manure is environmentally risky and the Commonwealth needs to take serious steps toward eliminating the practice. Application onto snow covered and/or frozen ground creates a critically dangerous situation where runoff is virtually guaranteed during snow melt and ground thaw. Moreover, nitrogen leaching during precipitation events further pollutes the watershed.

Virginia's Draft WIP is inadequate with respect to manure storage because it does not offer any improvement on the programs that are currently in place. Virginia aims to have ninety-five percent of all "concentrated livestock and poultry operations" implement manure management systems by 2025.[41] Because "concentrated livestock and poultry operations" is not well defined in the WIP or in a statute, the scope of Virginia's goal is hard to assess. Nonetheless, Virginia's strategy for achieving this high level of implementation does not provide EPA with reasonable assurances. As discussed fully above, the current program has major gaps, which the WIP does not adequately close.

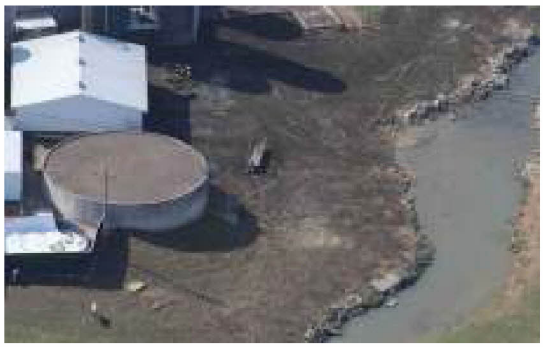

Figure 8: Waste lagoon completely full in winter, evidence of previous overflows right next to stream

Waste management systems are currently required of permitted CAFOs and AFOs, but is presently not well enforced, a flaw that the WIP fails to remedy. CAFOs with a VPDES permit as well as AFOs with either a general or poultry VPA permit are required to address manure

[41] 9 VA. ADMIN. CODE § 25-191-50; 9 VA. ADMIN. CODE § 25-192-70; 9 VA. ADMIN. CODE § 25-630-50.

storage and application as part of their NMPs.[42] More specifically, all three kinds of permits require that the permitted farm maintain adequate manure storage to "accommodate periods when the ground is ice covered, snow covered or saturated, periods when land applications of nutrients should not occur due to limited or nonexistent crop nutrient uptake."[43] Virginia's draft WIP calls for "better accounting for practices already required," but provides no details, and therefore no reasonable assurances, as to how these requirements will be better enforced. [44] Virginia does not indicate whether or not it will hire more inspectors or improve its inspection schedule in order to achieve this part of its goal. Again, as with many aspects of the WIP, Virginia does not identify funding or any other mechanism to provide reasonable assurances that improvements will actually occur.[45]

Virginia also fails to provide reasonable assurances that it will attain high implementation rates of manure management systems at currently unregulated farms. The Draft WIP states that, "Animal Waste Management Systems *may* be installed and managed . . ."[46] By using optional language Virginia fails to establish any real new requirements for the farms like the ones that Shenandoah Riverkeeper has observed. Likewise, Virginia's Draft WIP explains that, "[f]ull achievement may not be accomplished without establishing new expectations for farms below current permit thresholds."[47] Although Virginia notes that improvement with respect to this bad practice is unlikely without lowering the permitting threshold, Virginia fails to actually reduce the threshold. Therefore, the manure storage section of the WIP constitutes a failure on the part of Virginia to lay out real enforcement, funding, staffing, or other programmatic commitments needed to get the job done. This failure is consistent with EPA's conclusion that Virginia's Draft WIP "did not identify programs to sufficiently reduce pollution to meet TMDL allocations and provide assurance the programs could be implemented."[48]

D. Farming over Streams and Spring Seeps in Crop Fields

As part of its survey, Shenandoah Riverkeeper has noted that many farms disregard small tributaries when applying fertilizer, pesticides, and herbicides. These farms do not allow for a buffer between the application of these products and these small waterways, thereby directly increasing the level of harmful chemicals, phosphorous, and nitrogen in the Chesapeake Bay tributaries.

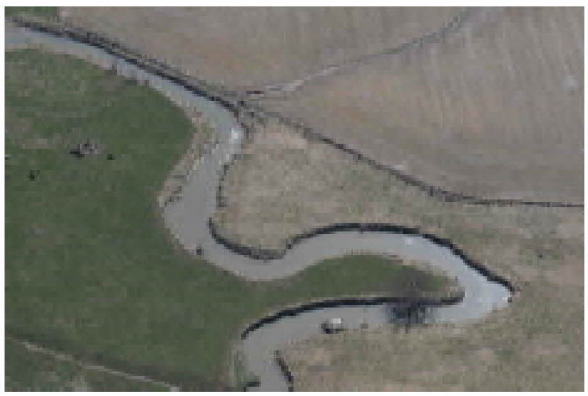

Figure 9: Stream in upper right corner has been plowed and farmed through, continues to discharge pollutants into main Creek

[42] 9 VA. ADMIN. CODE § 25-191-50(II)(A)(1); 9 VA. ADMIN. CODE § 25-192-70(I)(B)(7); 9 VA. ADMIN. CODE § 25-630-50(III)(B)(1). *See also* VA. ADMIN. CODE § 25-630-50(III)(B)(14) (limiting application of poultry waste to the schedule in the NMP, and prohibiting application to "ice- or snow-covered ground").
[43] *Id.* (emphasis added).
[44] *See* ENVTL. PROT. AGENCY, DRAFT CHESAPEAKE BAY TMDL: EXECUTIVE SUMMARY 1 (Sept. 24, 2010).
[45] *Id.* (emphasis added).
[46] *Id.*
[47] ENVTL. PROT. AGENCY, DRAFT CHESAPEAKE BAY TMDL: EXECUTIVE SUMMARY 1 (Sept. 24, 2010).
[48] WATERSHED IMPLEMENTATION PLAN, *supra* note 19, at 62.

Farmers also adversely affect small streams by simply ignoring them in planning and working their fields. Farmers will often till and seed directly through the small streams, or directly adjacent to them when it is not possible to drive straight through them. Consequently, the stream's natural structure is compromised and the streams are subject to all of the amendments used on the field. The Riverkeeper has also noted that intermittent and small streams have been omitted from Nutrient Management Plans. Consequently, current mechanisms are not adequately addressing the sensitive waterways. In total, Shenandoah Riverkeeper has counted fifty-two farms that farm through small or intermittent streams.

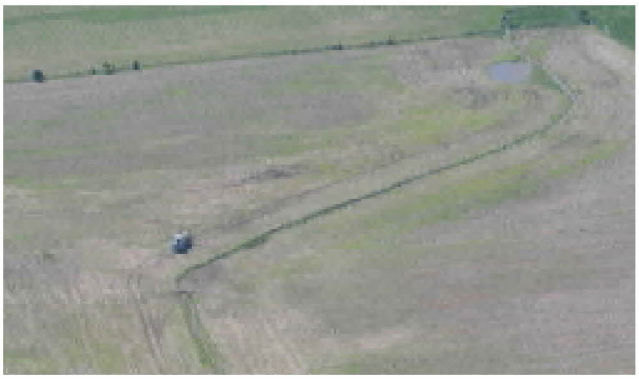

Figure 10: Herbicide sprayer with boom out over stream. Brown vegetation from previous herbicide application overlaps stream in several places - doesn't nearly meet buffer requirements

Virginia's Draft WIP plans to increase the use of grass buffers around perennial surface waters. The scope of this requirement leaves important small and intermittent waters unprotected from particularly harmful activities. Farming directly through small and intermittent waters leads to directly dumping chemicals, nitrogen, phosphorous, and sediment into the waters, which then feeds into the Chesapeake Bay. It should be noted that the normal flow regimes of these small intermittent streams coincide exactly with the periods where farm inputs are greatest, which is during the winter and spring. While small intermittent streams are often overlooked and disregarded, they deserve attention because they act as headwaters that will inevitably carry substantial pollutants downstream to larger tributaries.

Furthermore, Virginia's Draft WIP provisions on buffers do not provide reasonable assurances that ninety-five percent of all farms will comply with its new requirement. Because adding a new requirement will only affect permitted farms, and many farms do not require a permit, Virginia has not proven that it can attain the stated level of compliance. Virginia has not indicated that it will expand the scope of its agricultural permits or that it will develop effective incentives to cover un-permitted farms.

III. Conclusion

We appreciate the opportunity to comment on the draft TMDL. Based on the current draft of Virginia's WIP, we support the backstops EPA proposes in the draft TMDL. We would much rather see a Virginia driven solution to achieve the pollution reductions needed to restore the Bay. Such a solution would include funding commitments for incentive programs, improvements in regulatory programs, and increases in staff and effort needed for both types of programs. Unfortunately, Virginia's draft WIP is grossly inadequate, and leaves us no choice but to support EPA's backstop measures.

Sincerely,

Jeff Kelble
Shenandoah Riverkeeper

Deleted: CC: . The Honorable Douglas Domenech, Virginia Secretary of Natural Resources¶
. The Honorable Todd Haymore, Virginia Secretary of Agriculture and Consumer Services¶
. Anthony Moore, Assistant Secretary for Chesapeake Bay Restoration¶
. David Johnson, Director, Virginia Department of Conservation and Recreation
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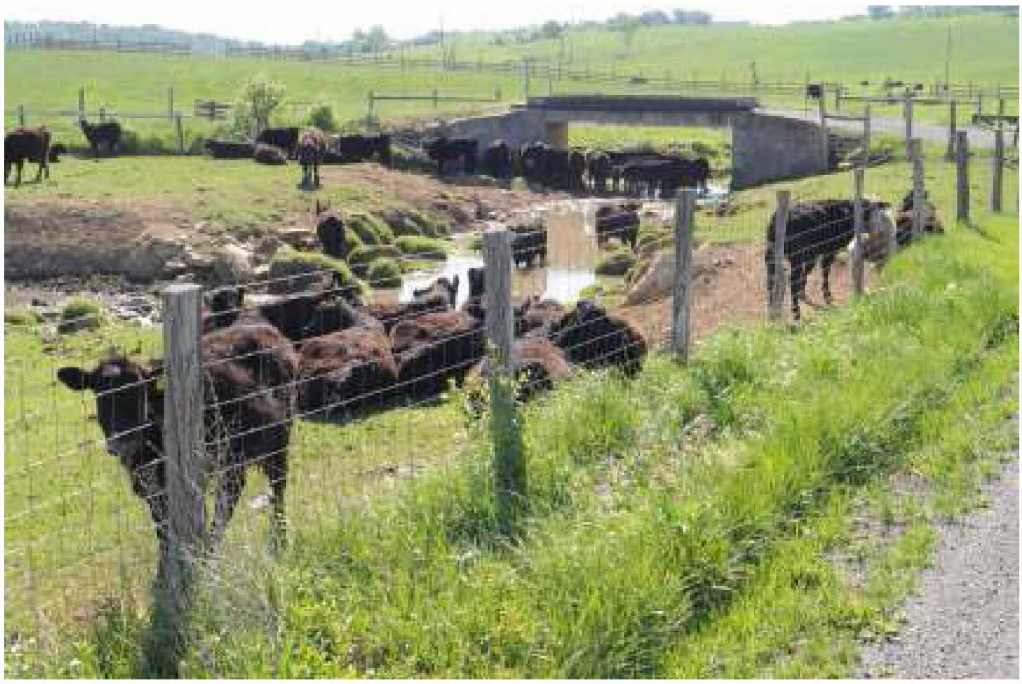
Appendix A

1. Animal Access to and Loafing in Streams and Rivers



2. Streamside Feeding and Concentration Near Streams and Intermittent Channels

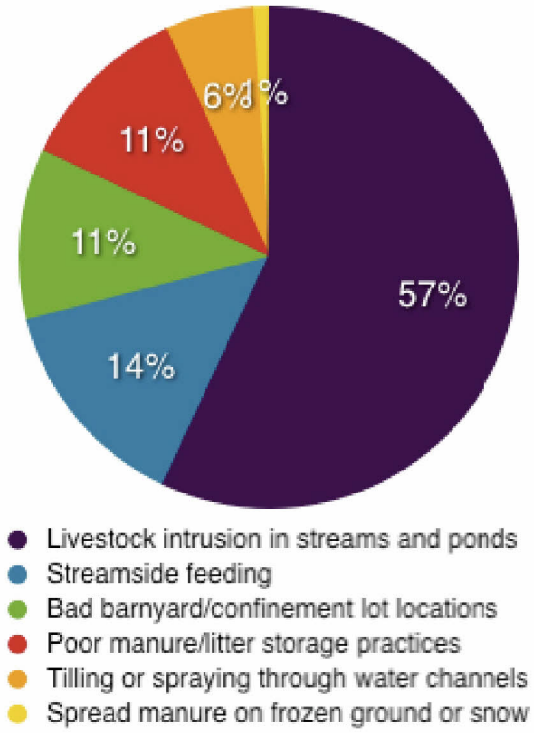
3. Manure Storage


Old Pile Footprint and Leachate
North Fork
Poultry Litter Piles
Discovered 4-18-08
60 yards long
20 yards wide
10 feet from stream
GPS Coordinate:


It Just Rained Several Inches
Surface Runoff Contacting Litter
Leachate Spreading

4. Farming over Spring Seeps in Crop Fields

Appendix B



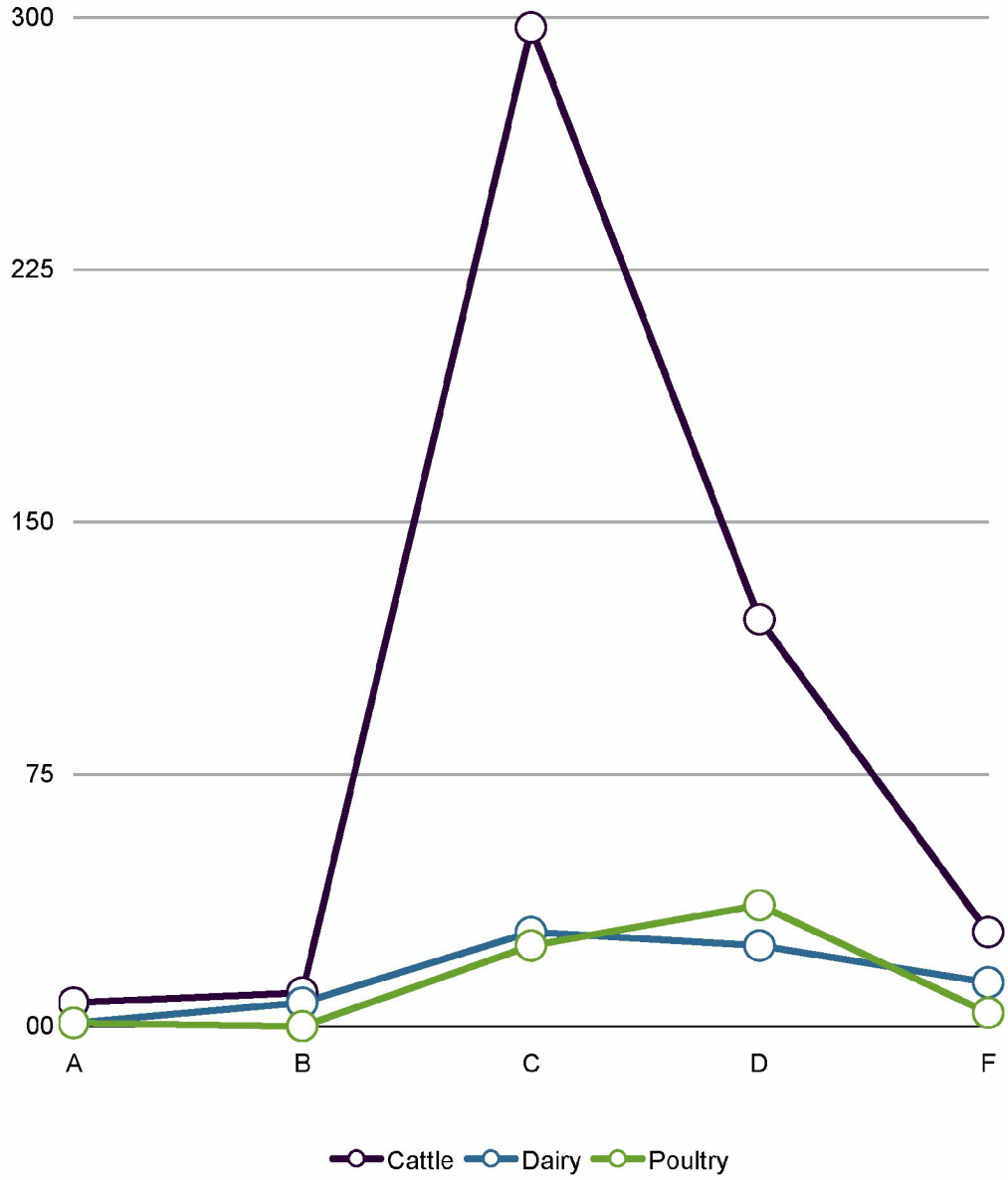
Observed Bad Agriculture Practices

Bad Practice	Number of Farms Observed
Livestock intrusion in streams and ponds	518
Streamside feeding	127
Bad barnyard/confinement lot locations	100
Poor manure/litter storage practices	102
Tilling or spraying through water channels	52
Spread manure on frozen ground or snow	10

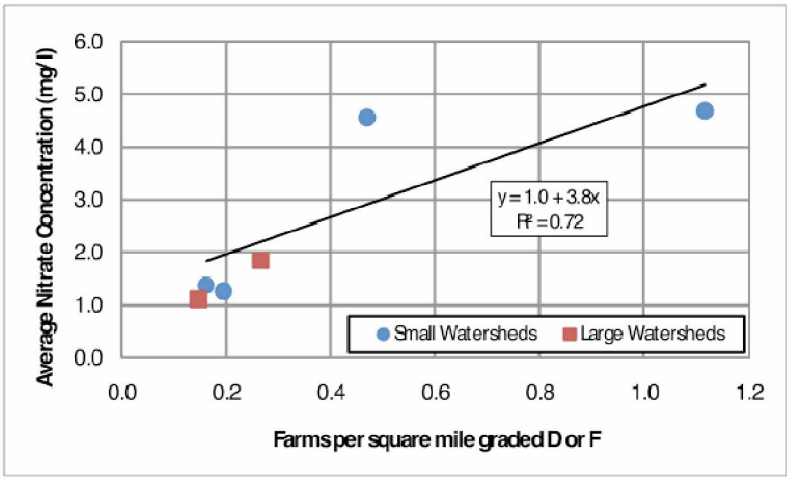
Grade Distribution of Farms by Type of Animal Husbandry

Grade:	A		B		C		D		F		Total
Cattle	7	1.5%	10	2.2%	297	64.1%	121	26.1%	28	6.0%	463
Dairy	1	1.4%	7	9.6%	28	38.4%	24	32.9%	13	17.8%	73
Poultry	1	1.5%	0	0.0%	24	36.9%	36	55.4%	4	6.2%	65
Equine	0	0.0%	1	6.3%	6	37.5%	9	56.3%	0	0.0%	16
Herbicide	0	0.0%	0	0.0%	0	0.0%	8	47.1%	9	52.9%	17
Farming Through Channels (only problem)	0	0.0%	0	0.0%	0	0.0%	3	100.0%	0	0.0%	3
Manure, Improperly Applied or Stored	0	0.0%	0	0.0%	2	50.0%	2	50.0%	0	0.0%	4
Sheep	0	0.0%	0	0.0%	2	66.7%	1	33.3%	0	0.0%	3
Stream Channel Alteration	0	0.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	2

Graph of Grade Distribution



Appendix C



Interpretation:

The above graph shows a strong correlation (R=0.85, Rsquared=0.72) between the number farm sites that were graded a D or F and the average instream nitrate concentration at the downstream sampling site over a three year period.

Methodology:

Shenandoah Riverkeeper set out to establish whether there was a correlation between the concentration of poorly graded sites, Ds and Fs, and degraded water quality. We selected four independent watersheds in the North River drainage with watersheds smaller than 50 square miles. We counted the number of D and F sites within those watersheds to determine the number of D or F sites per square mile. Then, we took the three year average of all nitrate data points from 11/3/2007 to 11/3/2010 to find the average nitrate level in the stream for each location.[49] We chose nitrate levels over other pollution measures because nitrates tend to be consistent over time and feature few outliers. For example, turbidity seems to vary drastically from one test to another, such that we felt too many other factors could temporarily affect test results.

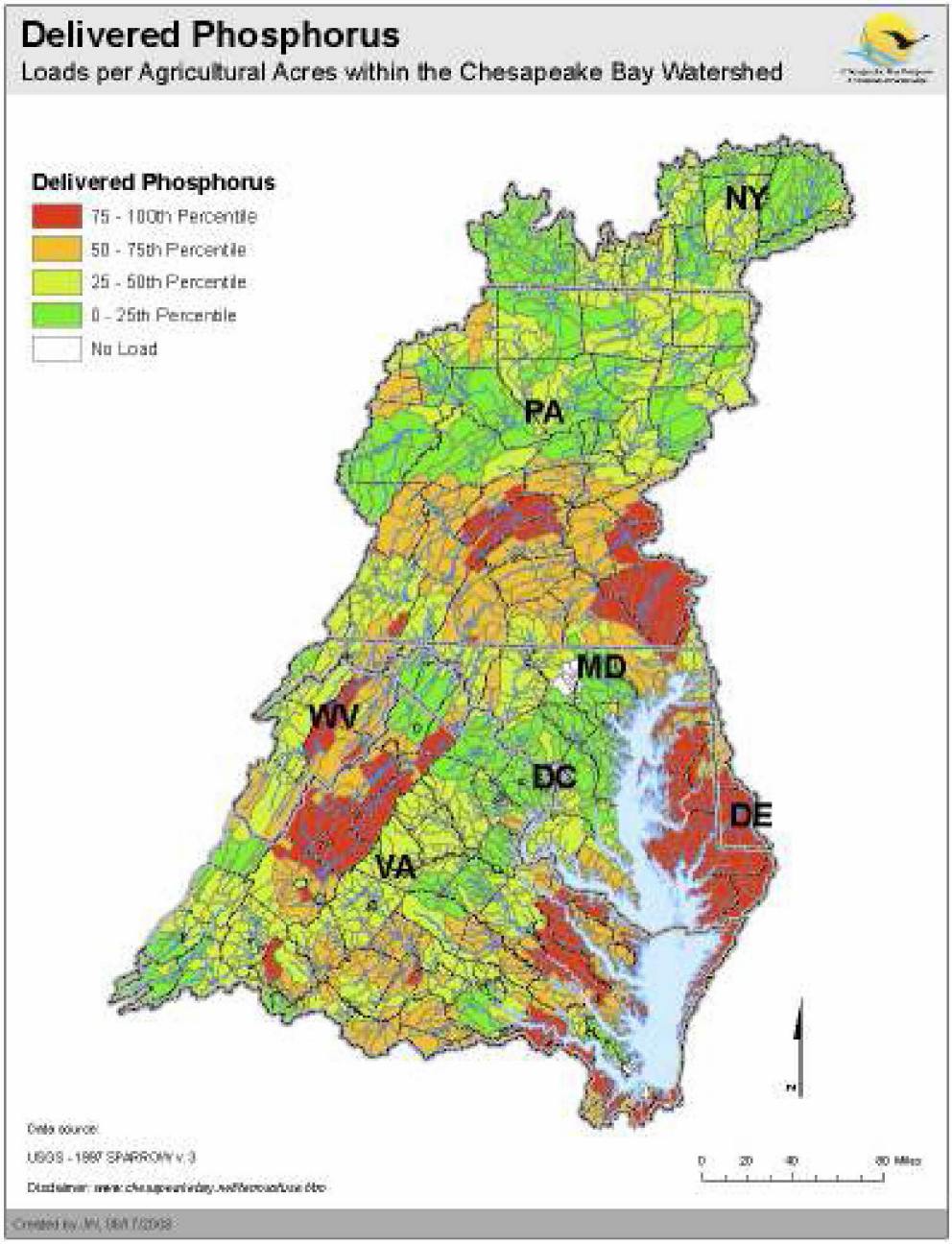
We found a very strong positive correlation, R=0.85 and R^2 =0.72, between the two variables. This suggests that there is a positive correlation between the intensity of agriculture in an area and water quality, as well as a positive relationship between common poor practices and water quality. These results confirm the accuracy of our concerns regarding these severe sites and their contribution to water quality problems.

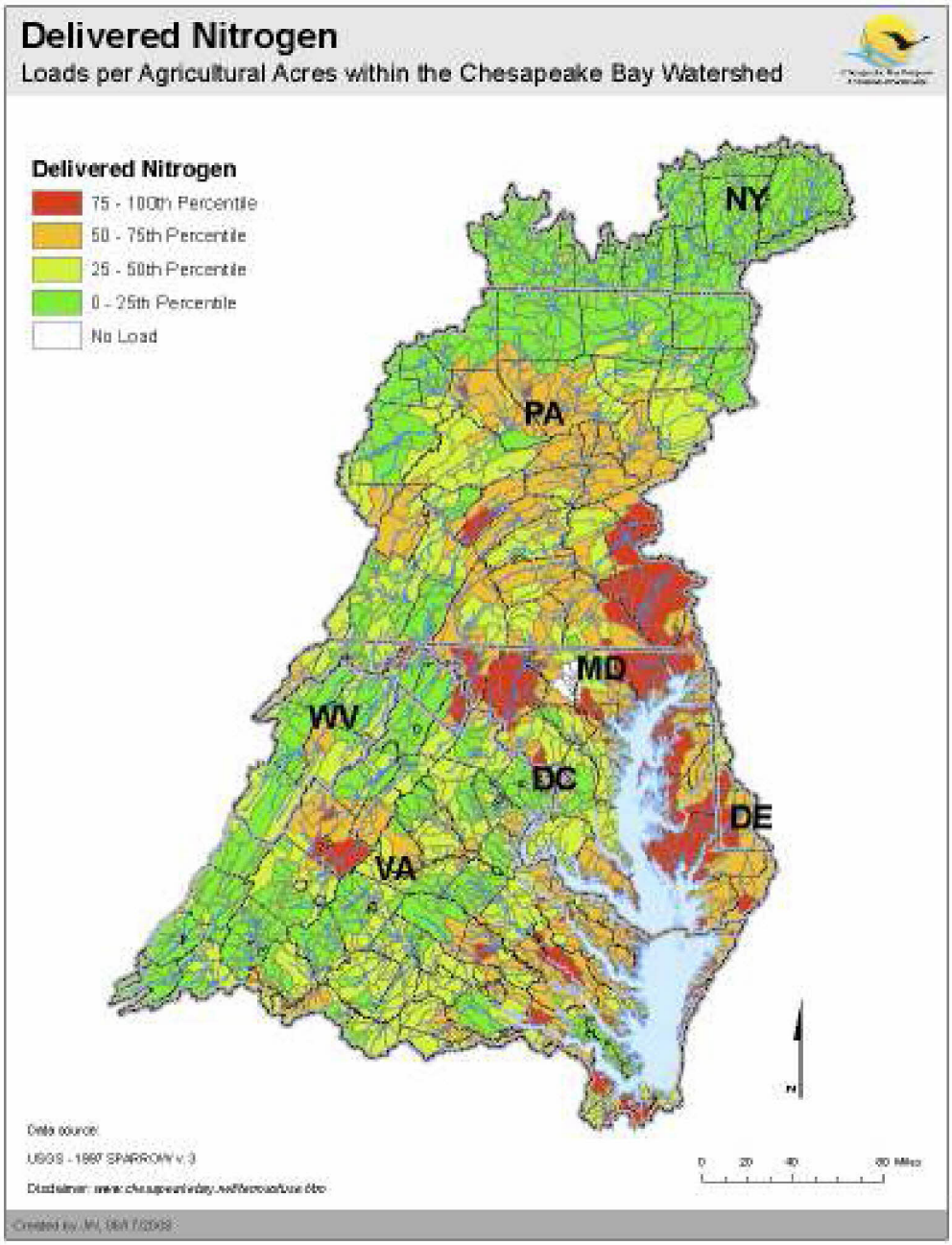
[49] *See* Friends of Shenandoah, *available at* http://www.fosr.org/maps/.

Data Points:

	D	F	Total	Sq Mi	Avg Nitrates	# Pts	Sites/sq mi
Correlation	-0.12	0.11	-0.05	-0.39	1.00	0.14	0.85
Mossy Creek at Spring Creek Rd	2	1	3	15.3	1.27	57	0.20
Cooks Creek at Route 11	15	10	25	22.4	4.68	52	1.12
Muddy Creek at Rushville Road	14	4	18	38.4	4.57	58	0.47
Briery Branch @ Thomas Spring Rd	6	2	8	49.4	1.38	57	0.16
Middle River at Clines Lane(Rt. 642)	27	2	29	196.0	1.11	52	0.15
North River at I-81	61	25	86	323.0	1.85	44	0.27
Upper North River at Spring Crk Rd	12	5	17	unknown			
Dry River at Rushville Road	1	0	1	unknown			

Appendix D


Delivered Phosphorus
Loads per Agricultural Acres within the Chesapeake Bay Watershed
Delivered Phosphorus
75 - 100th Percentile
50 - 75th Percentile
25 - 50th Percentile
0 - 25th Percentile
No Load
NY
PA
MD
WV
DC
DE
VA
Data source:
USGS - 1987 SPARROW v. 3
0 20 40 80 Miles


Delivered Nitrogen
Loads per Agricultural Acres within the Chesapeake Bay Watershed
Delivered Nitrogen
75 - 100th Percentile
50 - 75th Percentile
25 - 50th Percentile
0 - 25th Percentile
No Load
NY
PA
MD
WV
DC
DE
VA
Data source:
USGS - 1997 SPARROW v. 3
0 20 40 80 Miles